DETERMINATION

The Washington State Department of Ecology (Ecology), pursuant to Revised Code of Washington (RCW) 70.94.152, Washington Administrative Code (WAC) 173-400, and WAC 173-460 makes the following determinations:

The facility, if operated as described in the Notice of Construction Application (NOCA), will be in accordance with applicable rules and regulations, as set forth in Chapter 173-400 WAC and 173-460 WAC, and the operation thereof will not result in ambient air quality standards being exceeded. Information submitted in the NOCA shows criteria pollutant NOx will exceed the threshold level of two tons/year contained in WAC 173-400-110(5)(d). Emissions of other criteria pollutants (PM/PM_{10}, CO, SO_2, VOC) will be below the threshold levels contained in WAC 173-400-110(5)(d). Toxic air pollutants will be below Small Quantity Emission Rate thresholds and Acceptable Source Impact Level thresholds contained in WAC 173-460-080(2)(e).

The proposed activities require an NOCA in accordance with WAC 173-400-110(2), and WAC 173-460-040(1)(a) because potential emissions of NOx are calculated to be 13 tons/year.

The United States Department of Energy (USDOE) has elected to take a federally enforceable limit on the number of hours for the diesel-fired boiler and the emergency diesel generator that will operate each year.

The proposed project, if constructed and operated as herein required, will provide all known, available, and reasonable methods of emission control.

THEREFORE, IT IS ORDERED that the project as described in said NOCA is approved for construction, installation and operation, provided the following conditions are met:

APPROVAL CONDITIONS:

1. **TOTAL EMISSION LIMITS**

   1.1 The activities described in the NOCA will be permitted with the control technologies proposed, provided that the total emissions from all activities will not result in exceedance of WAC 173-460 Small Quantity Emission Rates (SQERs) and Acceptable Source Impact Levels (ASILs) or the criteria pollutants estimates listed under the WAC 173-400 section of the completeness checklist.

   1.2 A modification submittal of an NOCA will be required if the total emissions of criteria and/or toxic air pollutants exceed the emissions estimated in the NOCA and/or other limits specified under this order.

   1.3 NOx emissions shall not exceed 13 tons per rolling 12 month total.

2. EMISSIONS CONTROL

2.1 The activities described in the NOCA and summarized in the completeness checklist will be permitted without requiring additional emission control, provided that Best Available Control Technology/Toxics-Best Available Control Technology (BACT/T-BACT) emission controls described in the NOCA are in service during waste disturbing and bulk vitrification activities.

2.2 Emission control for particle or particle-bound Toxic Air Pollutant (TAP) emissions are High-Efficiency Particulate Air (HEPA) filtration. The use of this system as a required abatement control technology is covered under the radioactive air license, issued by the State of Washington Department of Health, with conditions and limitation specified therein. Controls regulated under that approval are deemed sufficient to address concerns over deminimus criteria and/or particulate TAP emissions.

2.3 For waste retrieval activities a portable exhauster, including major components of: a demister, heater, pre-filter and two stages of HEPA filters in series, fulfills T-BACT requirements in accordance with WAC 173-460-040.

2.4 For bulk vitrification activities, one venturi scrubber, two stages of HEPA filters in series, and one selective catalytic reduction unit fulfill T-BACT requirements in accordance with WAC 173-460-040.

2.5 Particulate emissions from offloading and transfer of process additives will be controlled by dedicated baghouse and vent systems. A covered hopper with a sealed pneumatic conveying system will be used to transfer soil to the mixer/dryer soil holding tank or silos. Particulate matter collected at the baghouse system is returned to the appropriate additive storage area for reuse.

2.6 The mixer/dryer emissions will be partially treated for moisture removal using a glycol-cooled condenser and mist eliminator prior to being routed to the Off Gas Treatment System (OGTS) downstream of the chemical/venturi scrubber. Water condensed in the condenser and removed in the mist eliminator will be routed to a storage tank for sampling and subsequent treatment or disposal.

2.7 The Phase 1 OGTS will consist of two sintered metal filters in series, a glycol-cooled condenser, a quench section, an atomizing chemical scrubber/venturi scrubber, and mist eliminator system. Condensed liquids will be drained into the condenser exhaust duct. Two quench/scrubber/mist eliminator systems will be installed in parallel, with one in service and the other on standby. Dilute sodium hydroxide will be injected in the atomizing scrubber section to reduce hydrogen chloride and other acid gas emissions. Based on expected or measured emission levels of pollutants such as hydrogen fluoride, both systems may be used simultaneously to provide additional scrubbing capabilities. Scrubber system offgases will pass through an additional condenser and mist eliminator, with drainage from those units routed to the scrubber recycle tanks. An offgas heater, parallel HEPA filters (in series), and a carbon filter will follow the mist eliminator.

NOx treatment will be accomplished by use of a selective catalytic reduction (SCR) unit. More than one SCR unit may be used. A packed tower scrubber may be used to allow the option of routing exhaust gases either through the SCR unit(s) or the tower scrubber to determine the effect on both scrubbing efficiency and scrubber blowdown rates. From the SCR unit(s), offgases will be routed through a polishing filter before being discharged through the exhaust stack equipped with sample ports and monitoring equipment.

Dust collected from the sintered metal filters will be recycled to the mixer/dryer, except for the final dust batch, which will be vitrified and sent to the integrated disposal facility (IDF) or another permitted disposal facility. Blowdown from the scrubber recycle tank will be sampled and routed to the permitted Effluent Treatment Facility or other permitted facility. Carbon filters will be modular and, upon reaching saturation, will be removed, sampled, and disposed.

2.8 Performance of the OGTS will be enhanced for Phase 2 to allow higher waste processing rates and to examine other NOx treatment methods. A larger SCR unit may be used or an additional unit added in series based on the analysis of Phase 1 emissions data. A packed tower scrubber may be used to allow the option of routing exhaust gases either through the SCR unit(s) or the tower scrubbers to determine the effect on both scrubbing efficiency and scrubber blowdown rates.

2.9 The diesel-fired boiler shall not operate for more than 7,008 hours per year on a 2-month rolling summation calculated once per month. Compliance shall be monitored by installing and operating a non-resetable totalizer on the boiler.

2.10 During phase 1 of the project, the diesel generator shall not operate for more than 20 hours. During phase 2 the diesel generator shall not operate for more than 80 hours. Compliance shall be monitored by installing and operating a non-resetable totalizer on the generator.

3. EMISSION ESTIMATES VERIFICATION

To ensure the emission estimates for waste disturbing and bulk vitrification activities are valid and bounding, the permittee shall confirm emission calculations derived from waste characterization data obtained through implementation of the Demonstration Bulk Vitrification System Data Quality Objective (DQO) (RPP-21227). The DQO will be implemented through the Ecology approved Sample and Analysis Plan as required by the Dangerous and/or Mixed Waste Research, Development, and Demonstration Permit (RD&D), Demonstration Bulk Vitrification System. The RD&D Permit and the Sample and Analysis Plan must be approved by Ecology prior to commencing any waste disturbing activities.

4. EMISSION CONTROL MONITORS

Refer to Section 5.3.8 of the NOCA. Monitoring is required for NOx emissions from bulk vitrification processing. Monitoring of Volatile Organic Compound (VOC) is required during waste retrieval operations and is to be conducted in accordance with the Hanford Industrial Hygiene monitoring program for potential worker exposure.

5. PROPOSED GENERAL APPROVAL CONDITIONS

a. **Visible Emissions**: The emissions from the retrieval and bulk vitrification activities shall not exceed 10% opacity. This shall be achieved by maintaining proper abatement control technology as required by the Washington State Department of Health. The emissions from the diesel generator exhaust shall not exceed 20% opacity. Visible emissions survey must be conducted during daylight hours and during periods when the emission unit is operating. The frequency shall be at least once per calendar quarter when operated. If the operator observes visible emissions for more than 10 consecutive minutes during the observation period, the cause of the visible emission will be determined and corrective actions taken as necessary or a visible determination of opacity will be performed using Ecology Method 9A or the United States Environmental Protection Agency (EPA) Method 9. Records of corrective actions taken to reduce opacity shall be maintained and available for Ecology inspection.

b. **Compliance Assurance Access**: Access to the source by EPA or Ecology shall be allowed for the purposes of compliance assurance inspections. Failure to allow access is grounds for revocation of the Order approving the NOCA.

c. **Modification to Facility or Operating Procedures**: Any modification to T-BACT control equipment identified in 2.3 and 2.4 above, contrary to information in the NOCA, shall be reported to Ecology at least 60 days before such modification. Such modifications may require a new, or amended, NOC Approval Order.

d. **Emissions Detrimental to Persons or Property**: No person shall cause or permit the emission of any air contaminant for any source if it is detrimental to the health, safety, or welfare of any person, or causes damage to property or business.

e. **Activities Inconsistent with this Order**: Any activity undertaken by the Permittee or others, in a manner that is inconsistent with the NOCA, and this determination, shall be subject to Ecology enforcement under applicable regulations.

f. **Obligations under Other Laws or Regulations**: Nothing in this Order shall be construed to relieve the Permittee of its obligations under any local, state, or federal laws, or regulations.

g. Incorporate permit approval conditions into the Hanford Site Air Operating Permit when scheduled for revision.

Nothing in this approval shall be construed as obviating compliance with any requirement of law other than those imposed pursuant to the Washington Clean Air Act, and rules and regulations there under.

Any violation of such rules and regulations, or of the terms of this Order, shall be subject to the sanctions provided in Chapter 70.94 RCW.

6. MANUALS

Existing operation and maintenance (O&M) manuals for all equipment, procedures, and controls associated with the Off Gas Treatment System that have the potential to affect emissions to the atmosphere shall be followed. Manufacturers' instructions may be referenced. The O&M manuals shall be updated to reflect any modifications of the process or operating procedures. Copies of the O&M manuals shall be available to Ecology upon request.

7. NOTIFICATION AND SUBMITTALS

Any required notifications and submittals required under these Approval Conditions shall be sent to:

Washington State Department of Ecology
Nuclear Waste Program
3100 Port of Benton Boulevard
Richland, Washington 99354-1670

8. RECORDKEEPING

Specific OGTS records shall be kept on-site by the Permittee and made available for inspection by Ecology upon request. The OGTS records shall be organized in a readily accessible manner and cover the most recent six month period and shall include the OGTS Work Package activities, including maintenance.

Applicable records required under this approval will be maintained on file and made available for Ecology inspector requests. Estimated emissions will be compiled and reported annually beginning with calendar year 2005 nonradioactive inventory of airborne emissions, pursuant to WAC 173-400-105.

a. Monitoring and reporting of NOx emissions is required for bulk vitrification processing. Report nonradioactive NOx emissions annually beginning with calendar year 2005 pursuant to WAC 173-400-105.

b. Monitoring of VOCs is required during waste retrieval operations and is to be conducted in accordance with the Hanford Industrial Hygiene Monitoring Program for potential worker exposure. Monitor once before exhauster operation begins, once during exhauster operation, and once after exhauster operation is completed. Records of VOC sample results will be maintained onsite and made available to Ecology upon request.

Specific VOC monitoring records during waste retrieval operations shall be made available for inspection by Ecology upon request.

9. APPROVAL ORDER AND RESTRICTIONS

Authorization may be modified, suspended or revoked in whole, or part, for cause including, but not limited to, the following:

1. Violation of any terms or conditions of this authorization.

2. Obtaining this authorization by misrepresentation, or failure to disclose fully all relevant facts.

The provisions of this authorization are severable and, if any provision of this authorization, or application, or any provisions of this authorization to any circumstances is held invalid, the application of such provision to their circumstances, and the remainder of this authorization shall not be affected thereby.

Any person feeling aggrieved by this ORDER may obtain review thereof by application, within 30 days of receipt of the ORDER, to:

Pollution Control Hearing Board
P.O. Box 40903
Olympia, Washington 98504-0903

Concurrently, copies of the application must be sent to:

Washington State Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

Washington State Department of Ecology
3100 Port of Benton Boulevard
Richland, Washington 99354-1670

These procedures are consistent with the provisions of Chapter 43.21B RCW, and the rules and regulations adopted thereunder.

DATED at Richland, Washington, this 15th day of December 2004.

PREPARED BY:

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